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# HOW TO MEASURE FIELDS

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Agriculture

Fields may be measured with the least amount of work by measuring the length of each side and the angle between the sides at each corner. This is the way in which the second inspection surveys will be made.

The sides of a field in these measurements are the edges of the area which will be covered by the crop when it is ripe. Any farmer can tell as soon as a crop is up how much wider the leaves of a ripe crop will spread beyond the seeded area. The sides of a field are measured along these lines. The corners are where the sides meet. Both the first and the second inspection will be made by measuring these sides.

The sides can be measured in feet, or in surveyors chains, or by counting the revolutions of a light wheel pushed like a wheelbarrow. To use wheel measure the exact number of revolutions per mile under actual field working conditions must be found by a field test.

To keep a record of measurements, the starting corner is called corner A and each corner in turn as you go around the field to the right, as shown in Figure 1, is called B, C, D, E, and so on until you reach corner A again. The top of every hill is called a corner because you cannot see beyond it to the next corner. The first side is called side AB because it runs from A to B. The other sides also are each named after the corners between which they lie. This system of lettering the corners makes sketches unnecessary, and makes the figuring of areas easier.

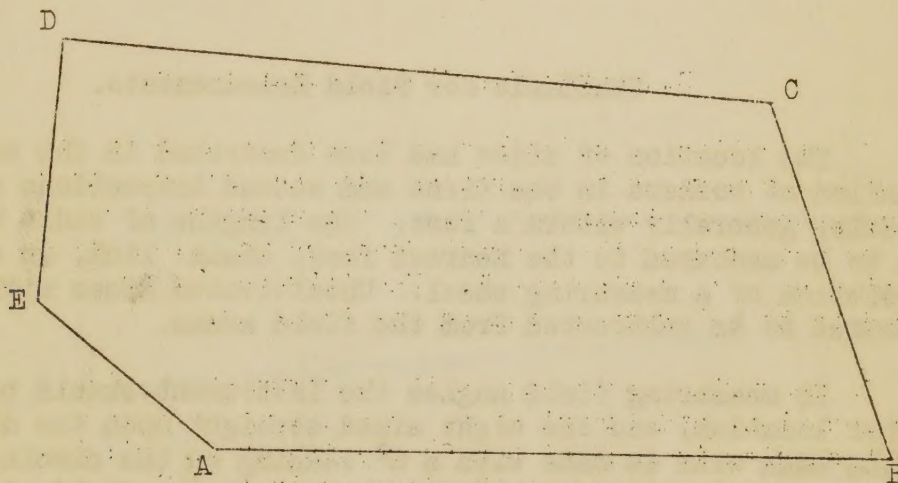


Figure 1. A five sided field.

The angles can be measured with a homemade simple surveying instrument. The instrument has a circle divided into 360 degrees.

Over.



Angles are measured on this circle by setting the instrument on a corner of a field and aiming its sight at the two nearest corners, one at a time. Poles to sight upon are held or stuck in the ground at each corner.

The side and angle measurements are written in blank spaces prepared for them on a field note card. The same kind of field note card is used for all sizes and shapes of fields. There is also a blank space on the card for "Slope degrees and distance". The degrees of up hill or down hill slope are measured with a plumb bob on a little metal half circle on the surveying instrument, and the distance up or down hill is counted in steps a yard long. The degree and yard measure is written on the card, for example, as "11° & 17 yds."

The men who measure the fields do not figure the number of acres, but merely report the length of sides, size of angles, and the slope measurements upon a standard form of card. A clerk in the county office figures the acreage of fields from these cards.

The way to learn to measure land is in the field. Learn one measurement at a time, sides, field angles, and slopes. Few sides will be steep enough to require slope measurements.

For further information which may help you to measure more accurately and rapidly, read only those parts of the circular "The Measurement of Fields under Production Control Contracts," which refer to the measuring equipment you choose to use, or to field problems you actually meet. The circular was prepared to cover a great variety of field and crop conditions in detail and therefore covers a number of questions in which you may have no interest.

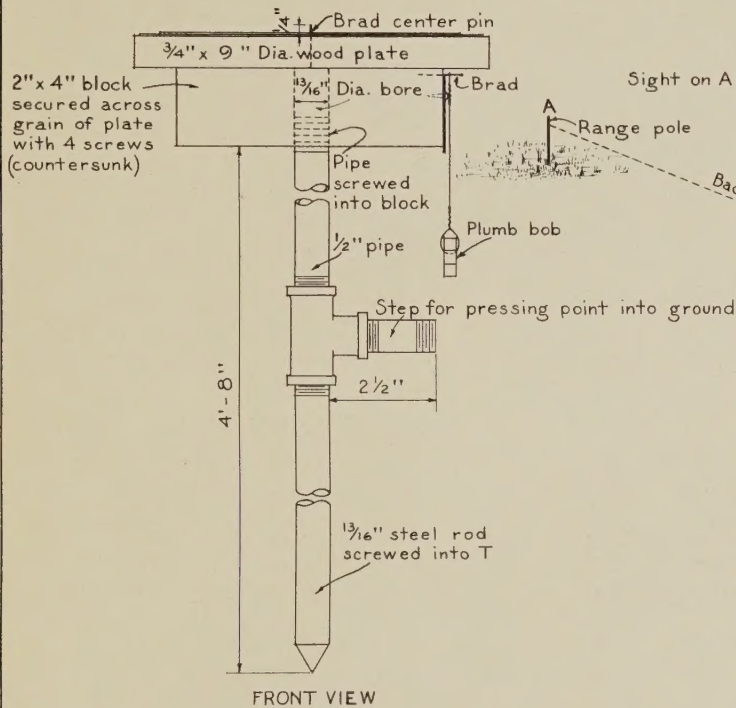
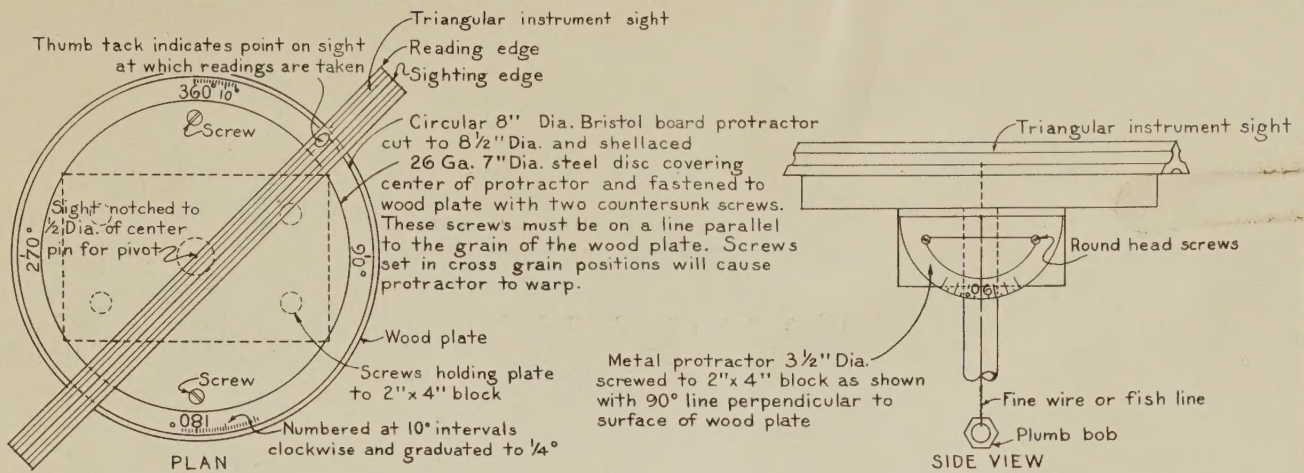
#### Standards for Field Measurements.

The location of sides has been described in the second paragraph. Location of corners in the first and second inspections should agree closely, generally within a foot. The lengths of sides between corners are to be measured to the nearest foot, chain link, or one tenth of a revolution of a measuring wheel. Uncultivated areas within fields are measured to be subtracted from the field areas.

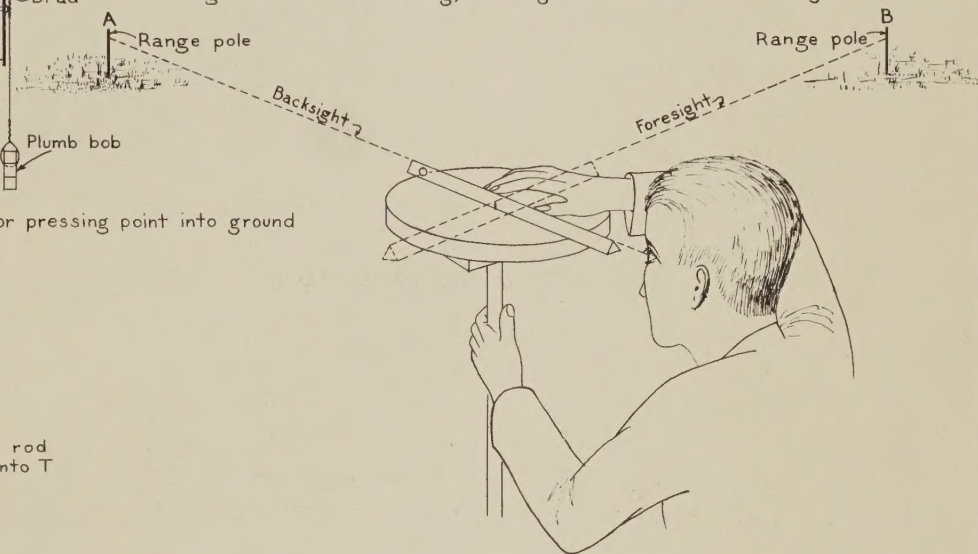
In measuring field angles the instrument should be set upon each corner location, and the sight aimed straight upon the nearest corners. If the back site is made with a 0° reading on the circle, the fore sight can give a direct measure of the degrees in the field angle. Read this angle to the nearest one fourth of one degree.

No record is made of slope measurements of less than 8°. Slopes of 8° or more are measured to the nearest degree. The length of a slope is measured in yards for the distance in which the slope changes no more than 2°. Each change in slope of 2° should be measured separately if it extends more than ten yards.



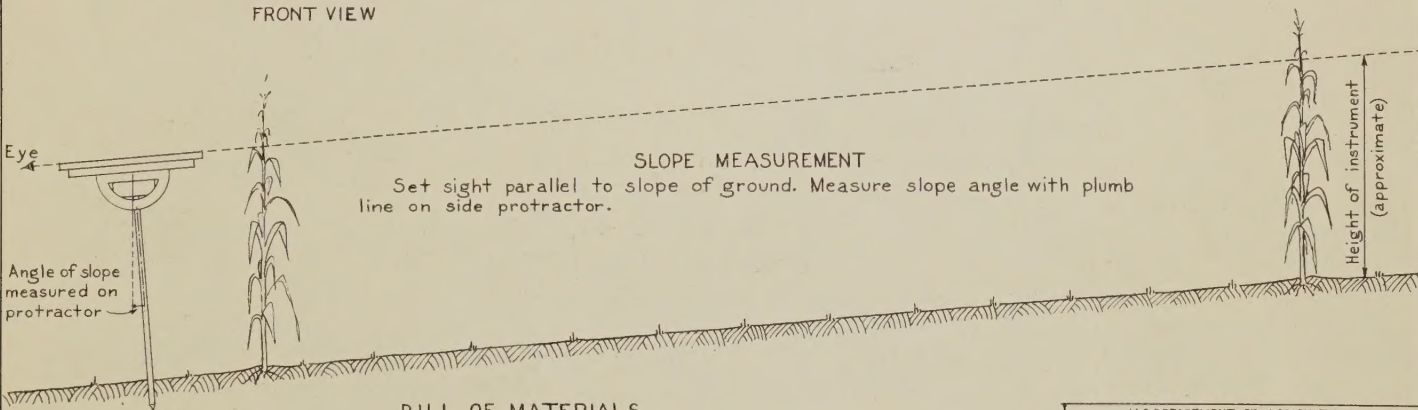


### ANGLE MEASUREMENT



### SLOPE MEASUREMENT

Set sight parallel to slope of ground. Measure slope angle with plumb line on side protractor.



### BILL OF MATERIALS

1-Triangular boxwood scale (12") for instrument sight  
 1-Thumbtack (to mark index point on scale)  
 1-Pc. 26 Ga. Sheet metal 7" diameter  
 1-Circular bristol board protractor 8" diameter  
 1-3/2" semicircular metal protractor  
 1-Pc. 3/4" circular wood plate 9" diameter  
 1-Pc. 2"x4" wood 6" long  
 1-Plumb bob

1-Pc. St'd. 1/2" pipe 3'-10" long threaded ends  
 1-St'd. 1/2"x1/2" pipe T  
 1-St'd. 1/2" pipe nipple 2" long  
 1-3/16" steel rod 10" long one end threaded  
 2-No. 1 round head wood screws 1/2" long  
 2-No. 1 flat head wood screws 1/2" long  
 4-No. 12 flat head wood screws 1 3/4" long  
 2-No. 16 Ga. wire brads 1" long

U.S. DEPARTMENT OF AGRICULTURE		
BUREAU OF AGRICULTURAL ENGINEERING		
DIVISION OF PLANS AND SERVICE		
SIMPLE SURVEY INSTRUMENT		
Scale:	Checked	SHEET 1 OF 1
Drawn M.P. Toone	5. P.C.	
Traced M.P. Toone	H. Magnuson	SERIAL No.
Approved		2870

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